REMARKS/ARGUMENTS

Claims 1 to 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Shigyo (U.S. 6,878,095) in view of Nozaki et al. (U.S. 5,547,438).

Reconsideration of the application is respectfully requested.

35 U.S.C. §103(a) Rejections

Claims 1 to 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Shigyo (U.S. 6,878,095) in view of Nozaki et al. (U.S. 5,547,438).

Shigyo discloses an automatic clutch control system of automatic clutch type transmission to control the automatic clutch when a vehicle is decelerated. (Col. 1, lines 7 to 10).

Nozaki discloses "an apparatus for controlling an engine and a lock-up clutch of a motor vehicle, which apparatus assures smooth engagement of the lock-up clutch even during deceleration of the vehicle." (Col. 1, lines 55 to 58, emphasis added).

Claim 1 recites "a method for controlling a clutch located between a drive motor and an automated manual transmission of a drive train, the method comprising:

controlling the clutch so as to change from an engine braking mode to a free wheeling mode; and

reengaging the clutch when a gas pedal is operated in the free-wheeling mode only when an engine rotational speed is above a transmission input rotational speed."

As admitted in the Office Action, Shigyo fails to teach or show "reengaging the clutch when a gas pedal is operated in the free-wheeling mode *only when* an engine rotational speed is above a transmission input rotational speed" as recited in claim 1. *Shigyo does not teach the determination of the engine rotational speed nor the transmission input rotational speed and therefore is not capable of addressing such a step.* Reengagement of the clutch is not discussed at all and must be independent of the engine rotational speed or transmission input rotational speed, because there is no reason that these values are not measured at all. Furthermore, Shigyo teaches putting the automatic clutch in the slip state, not the disengaged state, to prevent the engine braking from becoming excessively large, when the detected deceleration is greater than or equal to a present first preset deceleration value. If the deceleration value becomes larger than

a second preset deceleration value the automatic clutch is finally disengaged completely. Therefore Shigyo does not address at all the stage of "reengaging the clutch when a gas pedal is operated in the free-wheeling mode *only when* an engine rotational speed is above a transmission input rotational speed." (emphasis added).

Moreover Nozaki also does not teach or show "reengaging the clutch when a gas pedal is operated in the free-wheeling mode only when an engine rotational speed is above a transmission input rotational speed." First, "the clutch" of claim 1 is a clutch located between a drive motor and an automated manual transmission of a drive train. In other words, the clutch of claim 1 is a conventional clutch which, when engaged, connects the drive motor to the automated manual transmission and, when disengaged, disconnects the connection between the drive motor and the automated manual transmission. Nozaki et al. is addressed to a system having a torque converter located between a drive motor and an automatic transmission. The torque converter in Nozaki et al. includes a lock-up clutch, which is quite different from the clutch of claim 1. The operation of a torque converter is well-known. A pump is attached to a flywheel attached to the engine drive shaft. As the pump rotates, it forces fluid against a turbine which is attached to the automatic transmission. A lock-up clutch is merely used to lock the pump and the flywheel in the torque converter together and in certain circumstances does not act to connect and disconnect the drive motor and transmission. Furthermore, since the lockup clutch of Nozaki et al. is so different from the claimed clutch, the Examiner's contentions in paragraph 5 of the Final Office Action about the disclosure of Nozaki et al. and of the propriety of combining Nozaki et al. with Shigyo are clearly wrong. Since a lock-up clutch does not serve to connect and disconnect a motor to a transmission, the engagement and disengagement thereof, on any basis, is simply not relevant to the engagement and disengagement of a conventional clutch.

The Office Action asserts that "all the claimed elements were known in the prior art," which is not the case. As noted above both Shigyo and Nozaki et al. fail to teach or show "reengaging the clutch when a gas pedal is operated in the free-wheeling mode only when an engine rotational speed is above a transmission input rotational speed," as recited in claim 1. Therefore one of skill in the art would not have been able combine elements as claimed and no predictable results would have been yielded.

Neither Shigyo nor Nozaki et al. meet the limitations of claim 1. There would be no reason or motivation to combine these references and modifications of Shigyo in view of Nozaki et al. would still not meet the limitations of claim 1. Shigyo teaches away from the limitations of claim 1 as it is not concerned with engine or transmission speed but uses other sensors. Furthermore, Nozaki et al. refers to a drive train having a torque converter with a lock-up clutch, i.e., a drive train having an automatic transmission and no automated clutch. Claim 1 refers to an automated manual transmission with an automated clutch. The lock-up clutch, being part of the torque converter, is quite different from the automated clutch in the automated manual transmission. One of ordinary skill in the art would thus have no reason or motivation whatsoever to modify Shigyo in view of Nozaki et al.

Withdrawal of the rejection of independent claim 1 under 35 U.S.C. §103(a) and dependent claims 2 to 17 is respectfully requested.

Claim 18 recites "a drive train comprising:

a drive motor;

a manual transmission; and

a clutch connecting the drive motor and the manual transmission; and

a controller capable of automatically controlling the manual transmission, the controller capable of automatically changing an engine braking mode to a free-wheeling mode and reengaging the clutch when a gas pedal is operated in the free-wheeling mode only when an engine rotational speed is above a transmission input rotational speed."

As discussed above, Shigyo fails to teach or show "reengaging the clutch when a gas pedal is operated in the free-wheeling mode *only when* an engine rotational speed is above a transmission input rotational speed" as recited in claim 18. *Shigyo does not teach the determination of the engine rotational speed nor the transmission input rotational speed and therefore is not capable of addressing such a step.* Reengagement of the clutch is not discussed at all and must be independent of the engine rotational speed or transmission input rotational speed, because there is no disclosure that these values are not measured at all. Furthermore, Shigyo teaches putting the automatic clutch in the slip state, not the disengaged state, to prevent the engine braking from becoming excessively large, when the detected deceleration is greater

than or equal to a present first preset deceleration value. If the deceleration value becomes larger than a second preset deceleration value the automatic clutch is finally disengaged completely. Therefore Shigyo does not address at all the stage of "reengaging the clutch when a gas pedal is operated in the free-wheeling mode *only when* an engine rotational speed is above a transmission input rotational speed." (emphasis added).

Nozaki also does not show this limitation as discussed above since it is addressed to a completely different type of system.

The Office Action asserts that "all the claimed elements were known in the prior art," which is not the case. As noted above both Shigyo and Nozaki et al. fail to teach or show "reengaging the clutch when a gas pedal is operated in the free-wheeling mode only when an engine rotational speed is above a transmission input rotational speed," as recited in claim 18. Therefore one of skill in the art would not have been able combine elements as claimed and no predictable results would have been yielded.

Neither Shigyo nor Nozaki et al. meet the limitations of claim 18. There would be no reason or motivation to combine these references and modifications of Shigyo in view of Nozaki et al. would still not meet the limitations of claim 18. Shigyo teaches away from the limitations of claim 18 as it is not concerned with engine or transmission speed but uses other sensors. Furthermore, Nozaki et al. refers to a drive train having a torque converter with a lock-up clutch, i.e., a drive train having an automatic transmission and no automated clutch. Claim 18 refers to an automated manual transmission with an automated clutch. The lock-up clutch, being part of the torque converter, is quite different from the automated clutch in the automated manual transmission. One of ordinary skill in the art would thus have no reason or motivation whatsoever to modify Shigyo in view of Nozaki et al.

Withdrawal of the rejection of independent claim 18 under 35 U.S.C. §103(a) and dependent claim 19 is respectfully requested.

Claim 20 recites "a method for controlling a clutch located between a drive motor and an automated manual transmission of a drive train, the method comprising:

controlling the clutch so as to change from an engine braking mode to a free-wheeling mode, wherein the clutch is disengaged to implement the free-wheeling mode when a transmission gear is equal to or less than a maximum free-wheeling gear."

Shigyo does not teach or show "the clutch is disengaged to implement the free-wheeling mode when a transmission gear is equal to or less than a maximum free-wheeling gear." The Office Action states that column 6, lines 4 to 6, of Shigyo discloses this feature, however this portion does not discuss transmission gearing at all. Nozaki also does not show this limitation.

The Office Action asserts that "all the claimed elements were known in the prior art," which is not the case. As noted above both Shigyo and Nozaki et al. fail to teach or show "the clutch is disengaged to implement the free-wheeling mode when a transmission gear is equal to or less than a maximum free-wheeling gear," as recited in claim 20. Therefore one of skill in the art would not have been able combine elements as claimed and no predictable results would have been yielded.

Neither Shigyo nor Nozaki et al. meet the limitations of claim 20. There would be no reason or motivation to combine these references and modifications of Shigyo in view of Nozaki et al. would still not meet the limitations of claim 20. Shigyo teaches away from the limitations of claim 20 as it is not concerned with engine or transmission speed but uses other sensors. Furthermore, Nozaki et al. refers to a drive train having a torque converter with a lock-up clutch, i.e., a drive train having an automatic transmission and no automated clutch. Claim 20 refers to an automated manual transmission with an automated clutch. The lock-up clutch, being part of the torque converter, is quite different from the automated clutch in the automated manual transmission. One of ordinary skill in the art would thus have no reason or motivation whatsoever to modify Shigyo in view of Nozaki et al.

Withdrawal of the rejection of independent claim 20 under 35 U.S.C. §103(a) is respectfully requested.

Claim 21 recites "a method for controlling a clutch located between a drive motor and an automated manual transmission of a drive train, the method comprising:

controlling the clutch so as to change from an engine braking mode to a free-wheeling mode, wherein the clutch is disengaged to implement the free-wheeling mode when a vehicle's driving speed is less than a maximum free-wheeling speed."

Shigyo fails to teach or show "the clutch is disengaged to implement the free-wheeling mode when a vehicle's driving speed is less than a maximum free-wheeling speed," as recited in claim 21. There is no disclosure in Shigyo of disengaging the clutch based on a comparison with a maximum free-wheeling speed.

The Office Action asserts that "all the claimed elements were known in the prior art," which is not the case. As noted above both Shigyo and Nozaki et al. fail to teach or show "the clutch is disengaged to implement the free-wheeling mode when a vehicle's driving speed is less than a maximum free-wheeling speed," as recited in claim 21. Therefore one of skill in the art would not have been able combine elements as claimed and no predictable results would have been yielded.

Neither Shigyo nor Nozaki et al. meet the limitations of claim 21. There would be no reason or motivation to combine these references and modifications of Shigyo in view of Nozaki et al. would still not meet the limitations of claim 21. Shigyo teaches away from the limitations of claim 21 as it is not concerned with engine or transmission speed but uses other sensors. Furthermore, Nozaki et al. refers to a drive train having a torque converter with a lock-up clutch, i.e., a drive train having an automatic transmission and no automated clutch. Claim 21 refers to an automated manual transmission with an automated clutch. The lock-up clutch, being part of the torque converter, is quite different from the automated clutch in the automated manual transmission. One of ordinary skill in the art would thus have no reason or motivation whatsoever to modify Shigyo in view of Nozaki et al.

Withdrawal of the rejection of independent claim 21 under 35 U.S.C. §103(a) is respectfully requested.

Claim 22 recites "a method for controlling a clutch located between a drive motor and an automated manual transmission of a drive train, the method comprising:

controlling the clutch so as to change from an engine braking mode to a free-wheeling mode, wherein the clutch is disengaged to implement the free-wheeling mode when no downhill driving is detected."

As admitted in the Office Action, Shigyo does not teach or show "the clutch is disengaged to implement the free-wheeling mode when no downhill driving is detected," as claimed in claim 22. *The Examiner alleges on page 6 of the Final Office Action that Nozaki et al. teaches that "the clutch is disengaged to implement the free-wheeling mode when no downhill driving is detected," citing Nozaki et al. column 6, lines 34 to 53. However, as discussed above, the lock-up clutch in the torque converter of Nozaki et al. is quite different from the claimed "clutch" and thus there would be no reason to combine the teaching of Shigyo and Nozaki et al. Furthermore, even if Nozaki et al. could be combined with Shigyo, there is no mention of free-wheeling nor do the disengaged first and second gears reference "no downhill driving being detected."* The Final Office Action also asserts on page 8, that Shigyo teaches such limitations in column 4, line 45 to column 7, line 4. However, Shigyo can not teach the limitation that "the clutch is disengaged to implement the free-wheeling mode when no downhill driving is detected," because there is no mention of the detection of "downhill driving" at all in Shigyo.

The Office Action asserts that "all the claimed elements were known in the prior art," which is not the case. As noted above both Shigyo and Nozaki et al. fail to teach or show "the clutch is disengaged to implement the free-wheeling mode when no downhill driving is detected," as recited in claim 22. Therefore one of skill in the art would not have been able combine elements as claimed and no predictable results would have been yielded.

Neither Shigyo nor Nozaki et al. meet the limitations of claim 22. There would be no reason or motivation to combine these references and modifications of Shigyo in view of Nozaki et al. would still not meet the limitations of claim 22. Shigyo teaches away from the limitations of claim 22 as it is not concerned with engine or transmission speed but uses other sensors. Furthermore, Nozaki et al. refers to a drive train having a torque converter with a lock-up clutch, i.e., a drive train having an automatic transmission and no automated clutch. Claim 22 refers to an automated manual transmission with an automated clutch. The lock-up clutch, being part of the torque converter, is quite different from the automated clutch in the automated manual

transmission. One of ordinary skill in the art would thus have no reason or motivation whatsoever to modify Shigyo in view of Nozaki et al.

Withdrawal of the rejection of independent claim 22 under 35 U.S.C. §103(a) is respectfully requested.

CONCLUSION

The present application is respectfully submitted as being in condition for allowance and applicants respectfully request such action.

If any additional fees are deemed to be due at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

Respectfully submitted,

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